No. 97-1709

Supreme Court, U.S.
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In The

Supreme Court of the United States

October Term, 1997

KUMHO TIRE COMPANY, LTD., KUMHO U.S.A., INC., AND HERCULES TIRE & RUBBER COMPANY, INC.,

Petitioners,

v.

PATRICK CARMICHAEL, AN INDIVIDUAL, FATHER AND NEXT OF KIN TO PATRICK CARMICHAEL, JR., A MINOR, LUZVIMINDA CARMICHAEL, AN INDIVIDUAL, MOTHER AND NEXT OF KIN TO CARINA HORN, A MINOR, AND ADMINISTRATRIX OF THE ESTATE OF JANICE CARMICHAEL, SHAMEELA CARMICHAEL, NATIMAH CARMICHAEL,

Respondents.

On Writ Of Certiorari To The United States Court Of Appeals For The Eleventh Circuit

BRIEF OF *AMICI CURIAE*, THE PRODUCT LIABILITY ADVISORY COUNCIL, INC., THE CHEMICAL MANUFACTURERS ASSOCIATION, THE CHAMBER OF COMMERCE OF THE UNITED STATES, AND MEDMARC, IN SUPPORT OF PETITIONERS

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Associate Justice Stephen G. Breyer, *The Interdependence of Science and Law*, Address at the 1998 American Association for the Advancement of Science Annual Meeting and Science Innovation Exposition (Feb. 16, 1998) 16

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D. Faigman, D. Kaye, M. Saks & J. Sanders, MODERN SCIENTIFIC EVIDENCE (1997) 26

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G. Michael Fenner, *The Daubert Handbook: Its Essential Dilemma, and Its Progeny*, 29 CREIGHTON L. REV. 939 (1996) 10

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INTEREST OF *AMICI CURIAE**

The Product Liability Advisory Council, Inc. ("PLAC") is a nonprofit corporation with 126 corporate members from a broad cross-section of American industry, and the product liability lawyers who represent them. Its corporate members include manufacturers and sellers in industries ranging from electronics to automobiles to pharmaceutical products and medical devices.[1] PLAC's purpose is to file *amicus* briefs on issues that affect the law of product liability. PLAC has submitted over 400 *amicus* briefs in state and federal courts, including this Court.

The Chemical Manufacturers Association (CMA) is a nonprofit trade association whose member companies produce, market, and use industrial chemicals. Its members comprise more than 90 percent of the productive capacity for basic industrial chemicals in the United States. The chemical industry employs over one million workers in this country, and produces about 2.1 percent of the U.S. gross domestic product. On a value-added basis, it is about 11.8 percent of U.S. manufacturing.

The Chamber of Commerce of the United States of America (the Chamber) is the largest federation of business, trade, and professional organizations in the United States. The Chamber represents an underlying membership of more than three million businesses and organizations of every size, sector, and region. Ninety-six percent of the Chamber's members

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*Pursuant to S.Ct. R. 37.6, counsel for *amici curiae* states that this brief was not authored in whole or in part by a party and that no person or entity, other than *amici curiae* and their counsel, made a monetary contribution to the proportion or submission of this brief.

Pursuant to S.Ct. R. 37.3, counsel for *amici curiae* states that both plaintiffs and defendant have granted blanket consent to the filing of *amicus* briefs. The parties have agreed to file a letter evidencing such consent.

[1] A list of PLAC's corporate members appears in the Appendix hereto.

are businesses with less than 100 employees. For these small businesses, having to defend claims that may be unsupported by reliable evidence can threaten their very existence.

MEDMARC is a specialty insurer which provides product liability coverage for medical device manufacturers. Owned and controlled by its members, MEDMARC was founded in 1979 in response to volatile conditions in the commercial insurance market for product liability insurance. MEDMARC's membership includes approximately 550 manufacturers and distributors of medical devices and diagnostic products.

The issue in this case is the proper standard for evaluating the reliability of expert testimony based on Fed. R. Evid. 702, *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), and *General Electric Co. v. Joiner*, 118 S.Ct. 512 (1997). *Amici curiae* are well-situated to address this issue. Their members must defend an increasing number of product liability lawsuits in which expert testimony is the rule, not the exception. *Amici curiae* regularly face appeals on issues relating to the propriety of expert testimony.

SUMMARY OF ARGUMENT

In *Carmichael v. Samyang Tire, Inc.*, 131 F.3d 1433 (11th Cir. 1997), the Eleventh Circuit Court of Appeals erred in concluding that this Court's decision in *Daubert* is inapplicable to expert testimony from an engineer who did not rely on scientific principles or any methodology or technique in arriving at his opinions. The Eleventh Circuit collapsed the reliability and relevancy requirements of Fed. R. Evid. 702 into the qualification requirement of that Rule, holding that, because the expert was qualified based on his training and experience, he could testify to his opinions arising from his training and experience. The Court of Appeals concluded that the district court had erred in applying the *Daubert* factors to evaluate the reliability of the expert's testimony, and remanded the case for reconsideration, with directions not to apply the *Daubert* criteria in assessing the reliability of the

expert's proffered testimony. The Court of Appeals' holding undermines the gatekeeper role of district courts, and opens the door for opinion testimony in precisely those situations when such testimony should be barred: when expert witnesses shun the applicable methodologies of their field, purporting to rely on their training and experience alone as the basis for their opinions. The Court of Appeals' decision inappropriately exalted the qualifications of the expert as the primary standard for determining admissibility, ignoring this Court's admonition in *Joiner* that "nothing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence which is connected to existing data only by the *ipse dixit* of the expert." *Id.* at 519.

Affirmance of the Court of Appeals' judgment would lead to an absurd result: experts who rely on scientific principles, or recognized methodologies or techniques, would be subjected to a *Daubert* analysis, while experts who disregard the rigors of science would pass through the gate without scrutiny. Such a result turns the law of evidence upside down: it holds the gate wide open for those who require the strictest scrutiny, and permits the expert to choose the standard that will be used to judge reliability. Expert witnesses cannot be permitted to cut a hole in the fence to avoid the gatekeeper. If the Court of Appeals' decision is permitted to stand, putative experts will quickly learn that using good scientific or technical methodologies invites judicial gatekeeping, while the disavowal of any methodology permits the witness to crawl through the fence. An expert in any discipline would be loathe to present to peers a conclusion lacking an objective foundation. This Court should not permit experts to testify to that which they would not present to their professional peers.

Contrary to the Eleventh Circuit's view, the *Daubert* factors are capable of broad application to many fields of expertise. While other factors may be appropriate in some cases, the four factors identified in *Daubert* are not merely standards for the admission of *scientific* expert testimony; they are standards which should be considered by courts in

evaluating the reliability of *all forms of expert testimony*. The *Daubert* factors help courts to separate objective knowledge from personal opinions, subjective belief, and unsupported speculation. They are as easily applied to the testimony of an engineer analyzing a tire failure or that of a beekeeper opining that bees always take off into the wind as they are to an epidemiologist testifying that Bendectin causes birth defects or a physician testifying that PCBs are capable of causing small cell lung cancer. Depending on the subject matter of the testimony, each of the factors may be more or less important; and in some fields there may be additional significant factors. However, no matter what field of expertise is involved, there must be an objective standard by which a trial court can address the reliability of proffered expert testimony. Fed. R. Evid. 702, as applied in *Daubert* and *Joiner* provides that objective standard. For these reasons, the Court of Appeals' judgment should be reversed.

ARGUMENT

I. Fed. R. Evid. 702 Requires Trial Courts to Exercise Their Gatekeeper Function Under *Daubert* to Determine the Relevance and Reliability of *All* Proffered Expert Evidence.

Given the growing complexity of issues in federal court litigation, expert testimony is frequently essential.[2] Expert testimony explains to lay jurors that which they may not otherwise understand. Hence, such testimony can be powerful and persuasive.[3] Because such testimony is so powerful, and

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[2] *See Joiner*, 118 S.Ct. at 520 (Breyer, J., concurring) (observing that "cases presenting significant science-related issues have increased in number. . . . "); *Ake v. Oklahoma*, 470 U.S. 68, 82 n.8 (1985) ("Modern civilization, with its complexities of business, science, and the professions, has made expert and opinion evidence a necessity. . . . ") (*quoting* 2 I. Goldstein & F. Lane, GOLDSTEIN TRIAL TECHNIQUES § 14.01 (2d ed. 1969)).

[3] *See Ake*, 470 U.S. at 82 n.7 ("[testimony] emanating from the depth and scope of specialized knowledge is very impressive to a jury. The same

because it necessarily dwells on issues with which judges and juries are unfamiliar, it must be scrutinized to assure its reliability. Otherwise, the legal process is subject to being subverted by the well-qualified witness who believes that he or she is infallible, having foregone the demands of the specialty and succumbed to the notion that a collection of anecdotes amounts to data. All expert testimony, whether of a scientific, technical, or other specialized subject must be reliable. The trial court, acting as gatekeeper, must assess the reliability and relevancy of expert evidence under Fed. R. Evid. 104(a) before such testimony is admitted.

Daubert teaches us that "[t]he primary locus of this obligation is Rule 702." *Id.* at 589. Indeed, this Court recently observed that "the exclusion of unreliable evidence is a principle objective" of Rule 702. *United States v. Scheffer*, 118 S.Ct. 1261, 1265 (1998). In effect, this appeal is focused on a single question: how should trial courts fulfill their gatekeeping obligation to determine the reliability of proffered expert testimony? In answering this question, the Court must construe and apply that Rule.

Rule 702 contains three separate requirements for expert testimony to be admissible:

(1) The expert's testimony must refer to "scientific, technical, or other specialized knowledge"; in other words, it must be reliable;

(2) The expert's testimony must "assist the trier of fact"; in other words, it must be relevant and must "fit" the facts of the case; and

(3) The expert must be qualified.

See Fed. R. Evid. 702; *see generally* Bert Black, Jonathan M. Hoffman, Jack F. Dunbar, Christine A. Hogan, and George W. Lavender III, *The Law of Expert Testimony – A Post-Daubert Analysis*, *in* EXPERT EVIDENCE A PRACTITIONER'S GUIDE TO LAW,

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testimony from another source can have less effect.") (*quoting* F. Bailey & H. Rothblatt, INVESTIGATION AND PREPARATION OF CRIMINAL CASES § 175 (1970)).

SCIENCE, AND THE FJC MANUAL 18-19 (Bert Black and Patrick W. Lee eds., 1997). Each of these elements must be met before an expert is permitted to testify. Thus, the satisfaction of one element cannot substitute for a failure to satisfy one of the other two. For example, the plaintiffs' experts in *Daubert* unquestionably satisfied the qualification prong of Rule 702. *See id.* at 583 n.2; but, on remand, the Ninth Circuit held the testimony was inadmissible because it had failed to meet the reliability and relevancy prongs of Rule 702. *See Daubert v. Merrell Dow Pharmaceuticals, Inc.* (*Daubert* II), 43 F.3d 1311 (9th Cir. 1995), *cert. denied*, 516 U.S. 869 (1995). This is not to say that reliability, relevancy, and qualifications are mutually exclusive. To the contrary, they are overlapping and interdependent in some respects. The scope of an expert's qualifications will determine the subjects upon which the expert can provide reliable expert testimony. Similarly, the reliability of the expert's testimony, *i.e.*, whether it is the product of objective knowledge, will necessarily affect whether the testimony can assist the trier of fact; unreliable testimony cannot aid the jury.

A. The Plain Language of Rule 702 Requires that the Words "Scientific, Technical, or Other Specialized Knowledge" be Read Together to Provide a Single Standard for the Admissibility of All Expert Testimony.

The Court of Appeals' erred in concluding that the gatekeeper role and *Daubert* analysis apply only to "scientific experts," *i.e.*, experts "who claim scientific expertise." According to the Court, an expert who bases an opinion on skill or experience is not a scientific expert and is not subject to *Daubert* scrutiny. This holding ignores the clear language of Rule and the canons of statutory construction.

The Federal Rules of Evidence are legislative enactments and courts use traditional tools of statutory construction in their interpretation. *Daubert*, 509 U.S. at 587; *Beech Aircraft Corp. v. Rainey*, 488 U.S. 153, 163 (1988). Hence, the Court's

inquiry must start with the plain language of the Rules. *Rainey*, 488 U.S. at 163. If needed, the Court may draw upon the legislative history,[4] or the Advisory Committee Notes[5] of a particular Rule to aid in its construction. The text of a statute or rule consists of words living "a communal existence," the meaning of each word informing the others and "all in their aggregate tak[ing] their purport from the setting in which they are used." *United States National Bank of Oregon v. Independent Insurance Agents of America*, 508 U.S. 439, 454 (1993).

Rule 702 provides that:

> If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

In his dissent in *Daubert*, Chief Justice Rehnquist questioned whether the phrase "scientific technical, or other specialized knowledge" must "be broken down into numerous subspecies of expertise, or did [the] authors [of Rule 702] simply pick general descriptive language covering the sort of expert testimony which courts have customarily received?" *Daubert*, 509 U.S. at 600 (Rehnquist, C.J., dissenting). This question may now be answered. *Amici* assert that the words of Rule 702 must be read together, and that *Daubert* must apply to all testimony falling within Rule 702.

Neither the text of Rule 702 nor its Advisory Committee Notes support the view that one admissibility standard applies to "scientific" evidence while other standards apply to "technical, or other specialized evidence." David J. Beck, Gregory P. Joseph, James F. Stapleton & Fletcher L. Yarbrough, Federal Rules of Evidence Committee, American College of Trial Lawyers, *Standards and Procedures for Determining the*

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[4] *See id.* at 164.

[5] *See id.* at 166.

Admissibility of Expert Evidence After Daubert, 157 F.R.D. 571, 578 (1994). The terms "scientific," "technical," and "specialized" are adjectives, modifying the meaning of the noun "knowledge." *Daubert* teaches that knowledge "connotes more than subjective belief or unsupported speculation," and that it " 'applies to any body of known facts or to any body of ideas inferred from such facts or accepted as truths on good grounds.' " *Id.* 589-90 (*quoting* WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 1252 (1986)).

The term "scientific" refers to "a grounding in the methods and procedures of science." *Daubert*, 509 U.S. at 590. Similarly, "technical" is defined as "practical knowledge especially of a mechanical or scientific subject," WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 2348 (1986), but it also encompasses knowledge that is characterized by specialization. Black, et al., *The Law of Expert Testimony*, *supra* at 51 (*citing* WEBSTER'S, *supra* at 2348). Technical knowledge might be characterized as spanning the gap between scientific knowledge and other forms of specialized knowledge. *See* Black, et al., *The Law of Expert Testimony*, *supra* at 51. "Specialized" knowledge consists of "any knowledge focused on a particular area of study, profession, or experience," and may arguably be broader than the terms "scientific" and "technical." Linda Sandstrom and William G. Young, *Daubert's Gatekeeper: The Role of the District Judge in Admitting Expert Testimony*, 68 TUL. L. REV. 1457, 1466 (1994) (*citing* RANDOM HOUSE DICTIONARY OF THE ENGLISH LANGUAGE 1950 (2d ed. 1987)).

Ultimately, in the effort to define criteria for the admission of expert evidence, there is no utility in creating hair-splitting distinctions among scientific, technical, and specialized knowledge.[6] Nor is there anything to be gained by

[6] In varying contexts, cases from this Court have used the terms "technical knowledge" and "specialized knowledge" almost interchangeably. Examples include: **(1)** legal knowledge, *compare Faretta v. California*, 422 U.S. 806, 836 (1975) (referring to a criminal defendant's *technical* legal knowledge) *with Shapero v. Kentucky Bar Assn.*, 486 U.S. 466, 490 (1988) (O'Connor, J. dissenting) (legal profession possessed of *specialized* knowledge); **(2)** knowledge of school policies and teaching procedures, *see San Antonio Independent School District v. Rodriguez*, 411 U.S. 1, 42 (1973) (referring to specialized knowledge and experience in education policy); **(3)** railroad labor and employment law, *compare National Labor Relations Board v. Boeing Co.*, 412 U.S. 67, 77 (1973) (referring to technical knowledge of labor law); *with Pennsylvania R.R. Co. v. Day*, 360 U.S. 548, 553 (1959) ("provisions in railroad collective bargaining agreement are of a specialized technical nature calling for specialized technical knowledge in ascertaining their meaning and application."); **(4)** shipping and ocean-going vessels, *see Far East Conference v. United States*, 342 U.S. 570, 573 (1952) (overseas shipping business requires a high degree of expert and technical knowledge); **(5)** general regulation of businesses and trade, *see E.I. Du Pont de Nemours & Co. v. Train*, 430 U.S. 112, 117 (1977) (referring both to scientific knowledge and technical information on factors necessary to restore and maintain water quality); *Federal Power Commission v. Colorado Interstate Gas Co.*, 348 U.S. 492, 501 (1955) (public utility rate making requires technical knowledge of accounting, economics, and policy); *Lehigh Valley Coop. Farmers v. United States*, 370 U.S. 76, 110 (1962) (noting need for technical knowledge of the milk industry in order to regulate it effectively); *Dalehite v. United States*, 346 U.S. 15, 52 (1953) (Jackson, J., dissenting) (referring to the technical knowledge of the inherent but latent dangers of ammonium nitrate fertilizer); *United States v. National Lead Co.*, 332 U.S. 319, 359 (1947) (discussing technical knowledge of the titanium pigment industry); *Rochester Telephone Corp. v. United States*, 307 U.S. 125, 139 (1939) (Interstate Commerce Commission must rule on technical matters regarding surface transportation); *St. Joseph Stock Yards Co. v. United States*, 298 U.S. 38 (1936) (counsel discussing the technical knowledge surrounding the operation of stockyards) *with Texas Gas Transmission Corp. v. Shell Oil Co.*, 363 U.S. 263, 268 (1960) (referring to the specialized knowledge of the regulation of natural gas businesses); *Burford v. Sun Oil Co.*, 319 U.S. 315, 327 (1943) (Texas state courts and Railroad Commission have specialized knowledge).

attempting to apply interpretive rules of construction in an effort to divine some deeply hidden meaning in the way in which Rule 702's drafters organized these terms. *See, e.g.*, Sandstrom and Young, *supra* at 1468 n.81 (considering and rejecting the application of the principle of *ejusdem generis* to

the knowledge prong of Rule 702). The terms scientific, technical, and specialized are not distinct, bright-line categories, and nothing in Rule 702 or *Daubert* suggests that they require separate admissibility analyses. Black, et al., *supra* at 50. Rather, they represent points along a continuum, each referring to knowledge of subjects that are not part of common or widespread knowledge. *Id.*

Daubert provides no support for the Court of Appeals' distinction between scientific expert evidence and all other kinds of such evidence. Because of its facts, the *Daubert* opinion focused on scientific evidence. But, *Daubert* teaches that "Rule 702 also applies to 'technical, or other specialized knowledge.' " *Id.* at 590 n.8. As the Court noted, "[a]lthough the *Frye* decision itself focused exclusively on 'novel' scientific techniques, we do not read the requirements of Rule 702 to apply specifically or exclusively to unconventional evidence." *Id.* at 593 n.11. Thus, while this Court's discussion may have been limited to the scientific evidence at issue in *Daubert*, the Court made clear that Rule 702 applies to all expert testimony, and that it is the locus of the trial court's obligation to act as gatekeeper. *See id.* at 589. To reaffirm this point, in *Joiner*, 118 S.Ct. at 517, the Court declared that "the Federal Rules of Evidence . . . leave in place the 'gatekeeper' role for the trial judge in screening such evidence." *Daubert* and *Joiner* were toxic tort cases, and each considered specific factual scenarios which clearly involved "scientific knowledge." However, this does not limit the scope of the gatekeeping role and does not permit experts professing "technical, or other specialized knowledge" to avoid the *Daubert* requirements of "appropriate validation," *i.e.*, "good grounds," by purporting to rely only on their training and experience in support of their opinion. *See Daubert*, 509 U.S. at 590; *see generally* G. Michael Fenner, *The Daubert Handbook: Its Essential Dilemma, and Its Progeny*, 29 Creighton L. Rev. 939, 972 (1996) ("If the expert is . . . an expert in 'technical or other specialized knowledge,' the judge still needs to determine whether the witness is in fact an expert, and, if so,

the judge needs to consider the reliability of the expert's general theory and methodology; the reliability and relevance of the expert's application of the theory and methodology to the facts of the case at bar; and, under Rule 403, whether unfair prejudice, confusion and time consumption substantially outweigh its probative value.").

Had the Drafters of Rule 702 intended to require different treatment for each of these categories, they could have stated the categories in separate rules. *Compare* Fed. R. Evid. 701 (referring to lay opinion testimony) *with* Fed. R. Evid. 702 (referring to expert opinion testimony), or in discrete subsections of the same rule. *See, e.g.*, Fed. R. Evid. 403 (containing 24 separate hearsay exceptions, each in its own discrete subsection). At very least, one might have expected some mention of the need for such differential treatment of these categories in the Advisory Committee Notes to Rule 702.[7] *See, e.g., Daubert*, 509 U.S. at 588 (scouring the Federal Rules of Evidence and the Advisory Committee Notes and finding no reference to the *Frye* rule for the admission of novel scientific evidence). None of the Federal Rules, nor any of the Advisory Committee Notes, supports the view that there are different standards for admitting expert evidence depending on whether the evidence is scientific, technical, or of another specialized form. Note, *A Misapplication of Daubert: Compton v. Subaru of America Opens the Gate for Unreliable and Irrelevant Expert Testimony*, 1997 B.Y.U. L.

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[7] The Judicial Conference Advisory Committee charged with proposing revisions to Rule 702 has recognized the broad application of Rule 702's reliability requirement beyond the field of scientific inquiry. The proposed Advisory Committee Note to Rule 702 states that "The Rule provides that expert testimony of all types – not only the scientific testimony specifically addressed in *Daubert* – presents questions of admissibility for the trial courts in deciding whether the evidence is reliable and helpful, and as such is governed by Rule 104(a)." Proposed Amendment to Fed. R. Evid. 702, Advisory Committee Note.

REV. 489, 506 (1997)[8] ("If the drafters intended that different standards should apply to various types of experts under Rule 702 or that there should be exceptions for certain kinds of expert evidence, arguably, they would have incorporated them into the Rules.").

Further, the common law of evidence does not support the distinction between scientific and other forms of expert evidence.[9] The closest the common law came to establishing a distinction between scientific and non-scientific evidence was in its treatment of *novel* scientific evidence. The common law included the "general acceptance" rule of *Frye v. United States*, 54 App. D.C. 46, 47, 293 F. 1013, 1014 (1923), which applied only to "novel scientific evidence." *See Daubert*, 509 U.S. at 585. But, *Frye* historically was applied "solely in criminal cases to new and novel explanative theories, in almost all cases forensic evidence offered by the government. *Frye* wasn't applied in product liability cases at all." 2 Michael H. Graham, HANDBOOK OF FEDERAL EVIDENCE § 702.5 (4th ed. Supp. 1998). Thus, while the common law did draw some distinctions among categories of expert evidence, those distinctions are not memorialized in the text of Rule 702 or replicated in this Court's analysis in *Daubert*. *See Daubert*, 509 U.S. at 593 n.11 ("Although the *Frye* decision . . . focused exclusively on 'novel' scientific techniques, we do not read the requirements of Rule 702 to apply specifically or exclusively to unconventional evidence.").

Finally, principles of sound judicial economy disfavor the Balkanization of Rule 702. As the American College of Trial Lawyers observed:

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[8] *Compton v. Subaru of America, Inc.*, 82 F.3d 1513 (10th Cir. 1996), *cert. denied*, 117 S.Ct. 611 (1996).

[9] The common law of evidence forms the "background" for the Federal Rules of Evidence. *See generally Daubert*, 509 U.S. at 587; *United States v. Abel*, 469 U.S. 45, 52 (1984). It may be considered in construing the meaning of the Rules. *Id.*

> We urge that it is preferable that there be a single conceptual framework for evaluating the admissibility of all types of expert evidence. Although it may be attractive to academics and ubiquitous CLE speakers to construct a complex "*Daubertology*" discipline in which fine distinctions are drawn among types of expert testimony, that result would be harmful both to the doing of justice and to our system of advocacy. . . . Given the combination of the enormously crowded dockets of the federal district courts and the apparent need for those courts to hold "*Daubert* hearings" with respect to challenged expert testimony, it is highly desirable that trial judges have a single standard to apply. . . .

Beck, et al., *supra*, 157 F.R.D. at 577. Other commentators agree:

> The least confusing and arbitrary way to deal with the classification issue would be to apply the same general standards of reliability and relevance to all types of expert testimony. There is no reason for an arbitrary classification to govern whether evidence relied on by the jury should be held to a lower standard of trustworthiness. . . .

Confronting the New Challenges of Scientific Evidence, 108 HARV. L. REV. 1481, 1527 (1995).

In sum, there is nothing either in the text of Rule 702 or in the decisions of this Court that in any way supports the Court of Appeals' distinction between "scientific and non-scientific expert testimony." *See Carmichael*, 131 F.3d at 1435.

B. An Expert's Training and Experience are Insufficient to Establish that the Proffered Testimony is Reliable.

The Court of Appeals held that an expert's qualifications through training and experience may establish the reliability

of the proffered testimony, even though the expert has applied no methodology or technique, and the expert's proffered testimony cannot pass through *Daubert's* gate. Under the Court of Appeals' reasoning, any expert would clear the reliability gate every time he or she is found to be qualified to testify based on training and experience. Such reasoning contradicts this Court's clear holding that Rule 702 requires the trial court independently to assess the reliability of proffered expert testimony. *Joiner*, 118 S.Ct. at 517; *Daubert*, 509 U.S. at 589.

In *Daubert*, there was never any question that the plaintiffs' experts possessed advanced degrees, had years of training and experience in their respective fields, and had "impressive" credentials. *Daubert*, 509 U.S. at 583 n.2. If an expert's training, experience, and qualifications were enough to establish the reliability of his or her testimony, this Court's decision in *Daubert* would have been superfluous. *See Daubert II*, 43 F.3d at 1325-16 ("something doesn't become scientific knowledge just because its uttered by a scientist; nor can an expert's self-serving assertion that his conclusions were 'derived by the scientific method' be deemed conclusive, else the Supreme Court's opinion would have ended with footnote two."). Likewise, in *Joiner*, the plaintiffs' experts were not found to be unqualified. However, the trial court excluded their testimony as unreliable and unable to assist the jury in determining the cause of the plaintiff's cancer. Perceiving no abuse of discretion in the trial court's ruling, this Court stated that:

> [N]othing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence which is connected to the existing data only by the *ipse dixit* of the expert. A court may conclude that there is too great an analytical gap between the data and the opinion proffered.

Joiner, 118 S.Ct. at 512.

The lesson of *Joiner* and *Daubert* is clear. Qualifications and experience in a particular field or discipline are necessary, but not sufficient, to establish admissibility. The expert's

opinions must also "have a reliable basis in the knowledge and experience of his discipline." *Daubert*, 509 U.S. at 592. Thus, the question is not whether the expert has hands-on experience but whether his or her testimony meets scientific standards of hypothesis testing and support by objective data. *DePaepe v. General Motors Corp.*, 141 F.3d 715, 719 (7th Cir. 1998). Rule 702 is designed to ensure that, when expert witnesses testify in court, they must adhere to the same standards of intellectual rigor that are demanded in their professional work. *Cummins v. Lyle Industries, Inc.*, 93 F.3d 362, 369 (7th Cir. 1996). If experts do so, "their evidence, if relevant, is admissible, even if the particular methods they have used in arriving at their opinion are not yet accepted as canonical in their branch of the scientific community." *Rosen v. Ciba-Geigy Corp.*, 78 F.3d 316, 318-19 (7th Cir. 1996). In order to determine whether there is a reliable basis for the expert's opinion, the trial court must exercise its gatekeeping role and examine whether there is objective support for the theories, principles, techniques, methodologies, or modes of analysis used by the expert, and by other experts in the relevant discipline. To be admissible, an opinion must have more for its basis than the experience and training of the expert; if it is engineering testimony, it must be grounded in the recognized methods and principles of engineering. Otherwise, the "knowledge" imparted to the jury is nothing more than subjective personal opinion.

Watkins v. Telsmith, Inc., 121 F.3d 984 (5th Cir. 1997), is illustrative on this issue. There, as here, an engineering expert sought to testify based only on his training and experience. Affirming the exclusion of this testimony, the Court of Appeals observed that:

> [I]t seems exactly backwards that experts who purport to rely on general engineering principles and practical experience might escape screening by the district court simply by stating that their conclusions were not reached by any particular method or technique. The moral of this approach would be, the less factual support for an expert's opinion, the

> better. [Such a] view of the admissibility of expert evidence is untenable.

Id. at 991.[10]

As the *Watkins* court correctly observed, speculation by a witness with training and experience is not rendered admissible because of the witness' qualifications: highly qualified witnesses who depart from the rigors of their disciplines are dangerous witnesses who are likely to confuse and mislead jurors, who may be seduced into accepting an opinion merely because it is spoken by one with extensive experience and stellar credentials. Indeed, courts should be particularly wary of that expert who proposes to ignore the methodology of the pertinent specialty and opine based on training and experience alone. The suggestion that cross-examination will ferret out weaknesses in testimony and lead to a correct result has become the mantra of those who would flatter the examiner and the adversarial system to escape scrutiny of the foundation for the expert's opinion.[11]

Rule 702 permits reliable and relevant testimony to be presented by a qualified expert. In addressing the admissibility of such testimony, the trial court must take care in defining the field of expertise required to answer the question

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[10] *See also Moore v. Ashland Chemical, Inc.*, No. 95-20492 (5th Cir. Aug. 14, 1998) (1998 U.S. App. LEXIS 18883) (*en banc*) (reaffirming *Watkins* and holding that a treating physician's training and experience in clinical medicine did not immunize his opinions from scrutiny under *Daubert* to determine their reliability and relevancy).

[11] Must the cross examiner bear the burden of demonstrating to a lay jury how erroneous a hypothesis is when that hypothesis is presented by a well-qualified expert? Such a situation harkens to the colloquy between Physicist Wolfgang Pauli and a colleague who asked whether a scientific paper was wrong. Pauli's response: "Oh no. Certainly not. That paper isn't good enough to be wrong." Associate Justice Stephen G. Breyer, *The Interdependence of Science and Law*, Address at the 1998 American Association for the Advancement of Science Annual Meeting and Science Innovation Exposition (Feb. 16, 1998).

presented, whether the witness has the necessary qualifications within that particular field, and whether there is an objectively reliable basis for the witness' opinion. For example, an engineer may be qualified to assess the methods for constructing durable tires and testing their performance in simulated driving conditions, and yet not have the appropriate foundation to testify about whether a particular tire suddenly deflated due to a latent design or manufacturing defect. Unless the witness follows the appropriate engineering method, his testimony should be excluded.

In this regard, all learned disciplines can draw from the lessons of science. Dr. Maria Angell, an editor of the New England Journal of Medicine recently described one of the most important and widely applicable lessons of scientific inquiry:

> In science, the requirement for verifiable evidence must be met, no matter who the researchers are or what their credentials. Not even Nobel Laureates are permitted to base a scientific conclusion on an educated guess. (They can, of course, make guesses or hypothesize, but those guesses will not be accepted as evidence unless they are put to the test). These stringent standards serve a purpose. In science as in all walks of life, it is not easy to know when you have leapt to an unjustified conclusion or simply made a mistake. Sometimes very successful scientists, perhaps even more so than novices, come to believe they are more or less infallible.

Marcia Angell, SCIENCE ON TRIAL: THE CLASH OF MEDICAL EVIDENCE AND THE LAW IN THE BREAST IMPLANT CASE 94 (1996).

Relying on the strength of one's own training and experience, even when coupled with a sincere belief in the correctness of one's thinking, does not provide an adequate substitute for reliance on objective, verifiable methodologies. In a forum of technically proficient peers, poorly founded theories may readily be exposed for what they are. In a courtroom, before a lay jury, a poorly founded or simply

incorrect theory or "observation" is less vulnerable, especially when it is presented from the mouth of an experienced and well-credentialed expert. Under Rule 702 and *Daubert*, it is the unique job of the trial court as gatekeeper to look beyond the credentials, professional accomplishments, training, and experience of the expert, and to determine whether the expert has relied on some objectively verifiable data or methodology.[12]

Here, the Court of Appeals recognized that the plaintiffs' expert:

> [M]akes no pretense of basing his opinions on any scientific theory of physics or chemistry. . . . Instead, [the expert] rests his opinion on his experience in analyzing failed tires. After years of looking at the mangled carcasses of blown-out tires, [he] claims that he can identify the telltale markings revealing whether a tire failed because of abuse or defect. . . .

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[12] A classic example of an expert's experience and qualifications leading to premature presentation of a theory as fact is the "cold fusion" experiment. In that instance, well-qualified scientists committed the professional sin of jumping to a conclusion without following the methodology of their discipline. Apparently motivated by competition from other respected scientists, two electrochemists rushed to announce and attempted to publish their findings, which they claimed demonstrated that fusion could occur in an experimental setting at room temperature. *See* Frank Close, Too Hot to Handle: The Race for Cold Fusion 328 (1991). However, their public announcements and attempts at publication were not preceded by an appropriate period of controlled experiments to verify their theory, or to explain other possible causes of the phenomenon they had observed. *Id.* at 328-29. In other words, their theory did not rest on a foundation of objective verification. Later, other scientists tested the theory, and consistently failed to reveal any proof of cold fusion. As time wore on, and other well-respected scientists found themselves unable to replicate the results of a relatively simple experiment, the cold fusion theory began to crumble. As noted by physicist Frank Close: "[t]here comes a point where one has to accept the message of the data – that the absence of evidence is evidence of absence." *Id.* at 349.

Carmichael, 131 F.3d at 1436 (footnotes omitted). The Court of Appeals found an analogy it thought useful: the plaintiffs' tire expert was like a beekeeper who could testify, based on his or her observations of many bees, that bees tend to take off into the wind. *Id.*[13] A beekeeper's training and experience may *qualify* him or her to testify as an expert regarding the habits of bees, but it does not mean that the beekeeper's opinions about bee behavior are reliable. A *Daubert* analysis is needed to determine reliability.

Further, a *Daubert* analysis is readily applied to assess the reliability of the beekeeper's testimony. Apiculture is the study of bees. It has a strong foundation in science, and is closely tied to the non-scientific occupation of beekeeping. Specialists in this field develop theories, test those theories by experiments, and publish their data in peer reviewed publications.[14] The fields of apiculture and beekeeping are well-integrated and it is possible to determine whether a particular principle or methodology is generally accepted in this very specialized community. The question whether bees take off or land into the wind has been explored by some of these

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[13] The beekeeper analogy was originally used in *Berry v. City of Detroit*, 25 F.3d 1342, 1350 (6th Cir. 1994) to distinguish between scientific and non-scientific evidence. Despite the *Berry* court's observation that "[t]he difference between scientific and non-scientific expert testimony is a critical one," it nevertheless applied the *Daubert* factors in evaluating the non-scientific testimony of an expert in police training. Indeed, the court noted that "[a]lthough . . . *Daubert* dealt with scientific experts, its language relative to the 'gatekeeper' function of federal judges is applicable to all expert testimony offered under Rule 702." *Id.*

[14] *See, e.g.*, Roy A. Grout, The Hive and the Honeybee (1921) (single volume text with many revised editions published, the most recent of which was published in 1975); J. Apicultural Research (published since the 1960s); Apicultural Abstracts (published since 1962, reviewing "the world literature on bees, beekeepers, and related subjects."). Other journals include Am. Bee J.; Bee Culture; Bee Science; and Bee World.

specialists. They formed theories, conducted tests, and published their results. *See* Hayward G. Spangler, Gordon D. Waller & Charles D. Owens, *Effects of Air Movement at the Hive Entrance on the Flight Activities of Honeybees*, 8 J. APICULTURAL RESEARCH 133 (1969).[15] *Amici* submit that the *Daubert* factors are readily applicable to test the reliability of the theory that bees always take off into the wind. However, under the Court of Appeals' view, no reliability analysis would have been undertaken simply because a beekeeper is a qualified witness, having seen a lot more bees than the jurors may have.

To *Amici*, the bumblebee example seems discernibly different from the statements of the tire failure expert in this case. Here, the expert rendered his opinion in a deposition, based on his brief visual observation of this tire (made *after* he had submitted his expert report opining on causation). The expert stated that, in his mind, he was able to compare the plaintiffs' tire to thousands of other tires he had seen, and was able to determine that: (1) the tire was defective; and (2) as a result of that defect, the tire ruptured and caused the plaintiffs' automobile accident. A better analogy to this expert's testimony is found in Justice Stevens' recent dissenting opinion in *Joiner*, 118 S.Ct. at 522 n.6 (Stevens, J., concurring in part and dissenting in part): it might be said that, after years of looking at the contours of human skulls, an experienced (and presumably well-qualified) phrenologist would claim that he or she can identify the telltale ridges, lumps, and bumps revealing whether a criminal defendant is likely to be dangerous. Yet, as Justice Stevens quite correctly observed, such "junk science" "should be excluded under *Daubert*." *Id.*

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[15] This study indicated that bees were twelve times more likely to land in a hive entrance with outgoing air than they were to land in an entrance with ingoing air. *Id.* at 138. However, the researchers did not find a similiarly high ratio of bees taking off out of the hive against the wind. *Id.* The researchers did not consider this finding conclusive, as they considered the possibility that improved experimental techniques might lead to clearer results. *Id.*

Following the reasoning of the Court of Appeals, it would appear that, like the plaintiffs' expert in this case, a phrenologist who has cast aside even the remotest concept of objective analysis would be exempt from the strictures of *Daubert* simply because "he makes no pretense of basing his opinion on any scientific theory. . . . " *Carmichael*, 131 F.3d at 1436. *Amici* submit that this reasoning cannot stand.

C. The Question Whether Expert Evidence Can "Assist the Trier of Fact" Is Dependant Upon the Reliability of the Expert's Proffered Testimony.

In *Daubert*, the Court was faced with a choice of (at least) three conceptual models for determining the admissibility of expert evidence under Rule 702. It chose a reliability standard coupled with a relevancy standard. The relevancy standard demands that expert testimony must "assist the trier of fact to understand the evidence or to determine a fact in issue." Expert evidence must "fit" the facts of the case. *Daubert*, 509 U.S. at 591; *see also United States v. Downing*, 753 F.2d 1224, 1242 (3d Cir. 1985). Thus, if the methodology, technique, or principle upon which an expert relies is too far removed from the facts of the case, the opinion will not assist the trier of fact and will not be admissible.[16] Expert opinions based on an unreliable methodology will have no probative value and, therefore, they cannot assist the trier of fact. *See* Paul C. Giannelli, *The Admissibility of Novel Scientific Evidence: Frye v. United States, a Half-Century Later*, 80 COLUM. L. REV. 1197, 1235 (1980) ("The probative value of scientific evidence . . . is connected inextricably to its reliability; if the technique is not

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[16] *See, e.g., Joiner*, 118 S.Ct. at 518 ("The issue was whether *these* experts' opinions were sufficiently supported by the animal studies on which they purported to rely. The studies were so dissimilar to the facts presented in this litigation that it was not an abuse of discretion for the District Court to have rejected the experts' reliance on them.") (emphasis in original).

reliable, evidence derived from that technique is not relevant.") (footnotes omitted). Thus, whenever expert testimony is challenged based on Rule 702, a trial court must necessarily undertake a reliability inquiry under *Daubert* and Rule 702 before it can assess the relevancy of the expert evidence.[17]

II. *Daubert* Provides an Objective Approach for Determining the Reliability of *All* Expert Testimony.

The Court of Appeals strayed from this Court's holdings in *Daubert* and *Joiner* when it concluded that the *Daubert* factors did not apply to expert testimony based on training and experience. *Carmichael*, 131 F.3d at 1436. In so doing, the Court of Appeals' undercut the clear holding in *Daubert* that expert testimony must be reliable in order to be admissible.

A. The *Daubert* Factors: Ensuring That Expert Testimony Rests on an Objective, Reliable Foundation.

Rule 702 requires that trial courts act as gatekeepers to assure the reliability and relevancy of expert testimony. *Joiner*, 118 S.Ct. at 517. The reliability requirement in Rule 702 finds its locus in the phrase "scientific, technical, or other specialized knowledge." *Daubert*, 509 U.S. at 590. According to *Daubert*:

> "[K]nowledge" connotes more than subjective belief or unsupported speculation. The term "applies to any body of known facts or to any body

[17] Because reliability will affect the relevance inquiry, it will necessarily affect the balancing of probative value and prejudicial effect under Fed. R. Evid. 403. As this Court has recently noted, probative value and prejudicial effect are not determined in a factual vacuum. *See Old Chief v. United States*, 117 S.Ct. 644, 652 (1997). Therefore, if there is a more reliable methodology available, other than the one chosen by the expert, the trial court must consider that factor in its Rule 403 balancing analysis.

> of ideas inferred from such facts or accepted as truths on good grounds."

Id. (*quoting* WEBSTER'S THIRD INTERNATIONAL DICTIONARY 1252 (1986)). The Court reasoned:

> Proposed testimony must be supported by appropriate validation – i.e., "good grounds," based on what is known. In short, the requirement that an expert's testimony pertain to "scientific knowledge" establishes a standard of evidentiary reliability.

Daubert, 509 U.S. at 590. Thus, expert testimony must be based on knowledge and must have at its foundation some neutral principle or objective standard. Further, such evidence must be based on reasoning or a methodology which can properly be applied to the facts in issue. *Daubert*, 509 U.S. at 592-93.

Daubert cautions trial courts that, in conducting their gatekeeper function, "[m]any factors will bear on the inquiry. . . . " *Id.* at 593. The Court then offered several "general observations" to assist trial courts in assessing reliability and relevancy of expert testimony. *Id.* These general observations included four particular factors for evaluating the reliability of the methodology or technique upon which an expert seeks to rely in his or her testimony: (1) testing and testability; (2) peer review and publication; (3) the known or potential rate of error; and (4) "general acceptance" in the relevant community of experts. *Id.* at 593-94.

In the *Daubert* framework, knowledge is objective, whether it is scientific, technical, or of some other specialized field. Objectivity is a quality that lives in close kinship to trustworthiness. *See Daubert*, 509 U.S. at 590 n.9 (equating "evidentiary reliability" with trustworthiness); *see also* Fed. R. Evid. 702 (The Federal Rules of Evidence must be construed so "that the truth may be ascertained. . . . "). Regardless whether an expert's ultimate conclusions are right or wrong, *Daubert* requires that the expert rely on objectively verifiable methodologies or neutral principles in arriving at a conclusion. A putative expert's self-validating conclusions

cannot be tested, have no known or ascertainable rate of error, and are not subject to meaningful review within the relevant community of experts. As such, they do not constitute "knowledge" and will not assist the trier of fact for purposes of Rule 702.

Trial courts must consider the relevant factors, including those outlined in *Daubert*, to determine whether proffered expert testimony is based on objective knowledge. Training and experience in a particular field does not necessarily produce objective knowledge; the court may be faced with the Nobel Laureate who believes he or she is infallible. Personal experience may lead to knowledge, *DePaepe*, 141 F.3d at 719, but that knowledge should include objective testing of the opinion to be expressed. Even an experienced, well-trained, and qualified expert is not permitted to bring subjective, self-validating beliefs or speculation into the courtroom. *Id.* at 720.

B. The Application of the *Daubert* Factors to All Types of Expert Testimony is Consistent With This Court's Approach to Scientific, Technical, and Specialized Knowledge in a Variety of Contexts.

The importance of using objective principles and methodologies cannot be overstated. In cases involving many diverse subjects, this Court has repeatedly emphasized the importance of objective principles and methodologies as the foundation for reliable expert evidence. Moreover, in many of these same cases, the Court has looked to one or more of the factors stated in *Daubert* to assess the objective reliability of the evidence.

Four times in the last term alone, this Court considered the reliability of certain forms of specialized knowledge. Generally speaking, in each of these cases, the Court was troubled by the lack of some objective foundational element for the evidence in question. Most recently, in *Bragdon v. Abbott*, 118 S.Ct. 2196, 2210 (1998), the Court applied the

Americans With Disabilities Act (ADA) in a discrimination claim brought by a plaintiff infected with the human immunodeficiency virus against a dentist who had refused to fill the plaintiff's cavity in his office. Significantly, the Court stated that:

> As a health care professional, [the dentist] had a duty to assess the risk of infection based on the *objective*, scientific information available to him and others in his profession. His belief that a significant risk existed, even if maintained in good faith, would not relieve him from liability.

Id. at 2210 (emphasis added). Later, the Court explained that:

> Scientific evidence and expert testimony must have a traceable, analytic basis in *objective* fact before it may be considered on summary judgment.

Id. at 2212 (emphasis added) (*citing Joiner*, 118 S.Ct. at 518, 519).[18] This Court spoke with deliberate breadth in demanding that the dentist's medical evidence be objective. Further, in examining whether the dentist's refusal to treat the HIV infected patient was based on reasonable grounds, the Court noted that "[a] health care professional who disagrees with the *prevailing medical consensus* may refute it by citing a *credible scientific basis* for deviating from the accepted norm." *Id.* at 2211 (emphasis added). To be sure, the Court was applying the substantive standards of the ADA, not Rule 702; but, the Court emphasized the same concerns as it did in *Daubert*: the reliability of the theory or technique, as demonstrated by objective factors, including (among other things) the level of acceptance in the relevant community of experts.

United States v. Scheffer, 118 S.Ct. 1261 (1998), conveyed the same concern: promoting objective expert evidence and barring expert testimony based on the witness' subjective opinions. The Court noted that a polygraph operator testifying

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[18] Justices Stevens and Breyer concurred, adding that "[the dentist] relied on data that was inconclusive and speculative at best. . . . " *Id.* at 2213 (*citing Joiner*, 118 S.Ct. at 512).

as an expert witness "can only supply the jury with another opinion, in addition to their own, about whether the witness was telling the truth." *Id.* at 1267. The polygraph operator "forms an opinion of the subject's truthfulness by comparing the physiological reactions to each set of questions." *Id.* at 1267 n.9. Part of the danger of such evidence, as the Court correctly pointed out, is that "the aura of infallibility attending polygraph evidence can lead jurors to abandon their duty to assess credibility and guilt." *Id.* In addition, a polygraph operator's expert testimony that the subject of the test was or was not lying is inherently subjective. *See* Brief for the United States, filed in *United States v. Scheffer*, 118 S.Ct. 1261 (1998) ("the polygrapher conducting the examination injects a high degree of subjectivity into the examination.").[19] In part because of the subjective nature of this testimony, "the scientific community remains extremely polarized about the reliability of polygraph techniques." *Scheffer*, 118 S.Ct. at 1265 (*citing* 1 D. Faigman, D. Kaye, M. Saks & J. Sanders, Modern Scientific Evidence 565 n.14-.20 and § 14-3.0 (1997)). The Court's principal opinion and Justice Stevens' dissenting opinion each considered the reliability of the polygraph technique, looking to virtually the same reliability factors as those articulated in *Daubert*. The Court's principal opinion examined the level of acceptance in the relevant expert communities, the volume of published studies on the subject, the testing which has been performed as to the reliability of polygraph methods, and the potential rate of error of current polygraph techniques. *Scheffer*, 118 S.Ct. at 1265 & n.6, 1267 n.9. Justice Stevens' dissenting opinion considered some of these same issues in great depth. *Id.* at

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[19] *See generally Confronting the New Challenges, supra*, 108 Harv. L. Rev. at 1498 (Specifically addressing the subjectivity of polygraph evidence, explaining that: "[p]olygraph evidence boils down to the testimony of a particular person that, in his or her expert opinion, another person is or is not lying. If the polygraph evidence were admitted, the expert would present this opinion as the result of a scientific procedure. . . . ").

1271-72 & nn.5-6, 1276 & n.20-22, 24-27. The Court was rightly concerned with the reliability of this evidence. And, both the Court's principal opinion and Justice Stevens' dissenting opinion appropriately considered the testing, publication, error rate, level of general acceptance in assessing the probative value of polygraph evidence.

In *General Electric Co. v. Joiner*, this Court applied the abuse of discretion standard in reviewing the trial court's exclusion of expert testimony under *Daubert* and Rule 702. The Court noted that, while *Daubert* focused on methodology not conclusions, the two are not entirely distinct. If an expert's opinion is connected to the existing data only by the expert's insistence that there is such a connection, the trial court is within its discretion in excluding the opinion. *See Joiner*, 118 S.Ct. at 519. *Joiner* reaffirmed this Court's commitment to the *Daubert* framework as the analysis required under Rule 702. While *Joiner* did not expressly refer to the need for objective data, it is clear that the Court was concerned with subjective, self-serving assertions of experts taking the place of reliable information. *Id.*

In *Kansas v. Hendricks*, 117 S.Ct. 2072 (1997) the Court addressed the Kansas Sexually Violent Predators Act, Kan. Stat. Ann. § 59-29a01, stepping cautiously into a debate where "psychiatric professionals are not in complete harmony. . . . " *Id.* at 2081 n.3. The Court noted that the law and the mental health community may use similar terminology to describe different concepts, and that, therefore, a legislative finding that pedophilia is a mental illness may be made even while the mental health community may be far from reaching that same conclusion. In dissent, Justice Breyer, joined by Justices Stevens, Souter, and Ginsberg, reflected that "[t]he psychiatric debate . . . helps to inform the law by setting the bounds of what is reasonable. . . . " *Id.* at 2088 (Breyer, J., dissenting). In determining the reasonableness of the statute passed by the Kansas Legislature, both the majority and dissenting opinions reviewed the current level of consensus in the relevant community of experts. In essence, the Justices

considered "general acceptance" or the lack thereof as a factor in their analyses, weighing it among other factors. Even though the psychiatric subject matter in this case was arguably not *scientific* in nature, neither the majority nor the dissent had any difficulty evaluating the reasonableness of the Kansas statute based, in part, on the psychiatric information placed before the Court.[20]

Together, these cases demonstrate this Court's very appropriate concern for requiring an objective basis for all forms of specialized knowledge used as evidence in the federal courts, regardless whether that knowledge can be neatly pigeon-holed into a "scientific" category. Moreover, these cases illustrate the usefulness of the four reliability criteria discussed in *Daubert* as parts of a common sense framework for evaluating the reliability of specialized knowledge.

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[20] *See Foucha v. Louisiana*, 504 U.S. 71, 87 (1992) (O'Connor, J., concurring) ("science had not reached a finality of judgment") (*quoting Jones v. United States*, 463 U.S. 354, 365 n.13 (1983)). Dissenting in *Foucha*, Justice Thomas, joined by the Chief Justice, and Justice Scalia reflected in part their concern that the psychiatric community was still too divided as to what constitutes mental illness to allow an undisputably dangerous insanity acquittee to be released. *Id.* at 109 (Thomas, J., dissenting). As in *Hendricks*, the Court's focus was on the objective reliability of the psychiatric evidence. And, as in *Hendricks*, the Court considered the degree of consensus in the relevant community of experts, among other factors, to gauge the reliability of the evidence. *See generally Barefoot v. Estelle*, 463 U.S. 880, 916 (1983) (Blackmun, J. dissenting). Justice Blackmun's dissent in *Barefoot*, in many respects, is a prototype for this Court's later decision in *Daubert*, focusing on error rate, general acceptance, and testing, and drawing heavily from peer reviewed publications in the mental health field. *Id.* at 916-29. Even though the psychiatric and psychological evidence at issue in *Foucha* and *Barefoot* was not "pure" science in the Newtonian sense, neither Justice Thomas, in *Foucha*, nor Justice Blackmun, in *Barefoot*, had any difficulty applying *Daubert*-like factors in evaluating the reliability of the theory or technique in issue.

C. The *Daubert* Factors Represent a Flexible Inquiry Committed to the Sound Discretion of the Trial Court, Not a Definitive Checklist or Test.

Importantly, the *Daubert* Court expressly stated that, in suggesting the four factors, "we do not presume to set out a definitive checklist or test. . . . " *Id.* at 593. In the proceedings on remand in *Daubert*, the Ninth Circuit reasoned that the *Daubert* factors were "illustrative rather than exhaustive." *Daubert II*, 43 F.3d at 1316-17. In some cases, other factors may apply. *Id.* at 1317 (noting that "[o]ne very significant fact to be considered is whether the experts are proposing to testify about matters growing naturally and directly out of research they have conducted independent of the litigation, or whether they have developed their opinions expressly for the purpose of testifying."). And, depending on the case, some of the factors may be entitled to less weight or be entirely inapplicable. *Id.* at 1317.

This sort of flexibility is inherent and pervasive in *Daubert's* reasoning. Before *Daubert*, the *Frye* test allowed judges to defer to the scientific community to assess when a principle or technique was sufficiently reliable to be admitted. *Daubert* replaced that structure with one that required the federal district courts to determine whether experts' opinions have a reliable basis in the knowledge and experience of their discipline. *Daubert*, 509 U.S. at 592. In this inquiry, a trial court must necessarily have broad discretion to admit or exclude expert testimony under Rule 702 and *Daubert*. *Joiner*, 118 S.Ct. at 517.

Here, the Court of Appeals misapplied the *Daubert* factors, as though they were merely parts of a checklist. The court concluded that the application of *Daubert*'s factors was an all-or-nothing proposition – either they all applied (because the evidence was found to be "scientific") or none of them did (because the evidence was found to be based on training and experience). This absolutist view of *Daubert* is wholly inconsistent with the flexible, discretionary inquiry required by *Daubert* and *Joiner*.

In cases where an expert bases his or her opinion in part on practical, real-world experience, not all of the *Daubert* factors may apply with the same force and effect as they would to, for example, testimony based on a meta-analysis of epidemiological studies. Engineers in a range of technical subfields do, in fact, have peer reviewed publications available to expose their theories to criticism outside of a litigation venue. They can test their theories by employing appropriate methodology, assess the rate of error for their analytical approach, and describe whether that approach is generally accepted in the relevant community of experts.

CONCLUSION

This Court should reaffirm its holding in *Daubert*, applying *Daubert's* flexible reliability standard to all types of expert testimony as part of the inquiry mandated by Rule 702.

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APPENDIX A

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